

of special note occurred during the month in any section of the country. The heaviest recorded monthly amounts fell in the eastern portion of North Carolina and the Florida Peninsula, the central portions of Pennsylvania and New York, and in the upper Mississippi Valley and upper Lake region, where limited areas received as much as 6 inches.

RELATIVE HUMIDITY.

The mean relative humidity for the month was below the normal in most districts to the eastward of the Rocky Mountains, the only noteworthy exceptions being the northern border States from the region of the Great Lakes westward and locally in the Great Plains region, where the month as a whole was damper than usual. From the Rocky Mountains westward the atmosphere was also relatively damp in the northern and the southern districts, but in the central States, including Colorado, Utah, Wyoming, southern Idaho, and most of Nevada, as well as in the central Pacific coast district, the month was drier than the average.

GENERAL REMARKS.

The weather during September, 1916, was generally favorable for the prosecution of fall work, and rapid progress was made in seasonal farming operations. Harvesting and the threshing of grain advanced rapidly with little interruption, although rain caused some delay to this work in the upper Mississippi Valley and portions of the Rocky Mountain and North Pacific States. The weather was favorable for fall plowing and seeding in most districts, but there was considerable complaint of the soil being too dry for proper preparation and for germination of seed in some localities. The month was exceptionally favorable for the gathering of cotton, hay, and fodder, but at the close of the month fall pastures, late feed crops, and late truck and gardens were, as a rule, much in need of rain.

Average accumulated departures for September, 1916.

Districts.	Temperature.			Precipitation.			Cloudiness.		Relative humidity.	
	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure from normal.	General mean for the current month.	Departure from normal.
	° F.	° F.	° F.	In.	In.	In.	0-10		Perct.	
New England.....	60.8	+0.5	-5.8	2.48	-0.80	-2.00	4.6	-0.6	73	-2
Middle Atlantic.....	65.9	-0.7	-5.8	2.48	-0.80	-3.00	4.0	-0.6	73	-4
South Atlantic.....	72.2	-0.8	+8.4	2.02	-1.80	-9.50	3.9	-0.8	77	-3
Florida Peninsula.....	80.5	-0.5	-2.6	4.52	-2.80	-9.30	5.2	-0.2	78	-3
East Gulf.....	74.6	0.0	+6.6	2.23	-0.90	-0.30	3.4	-1.2	74	-2
West Gulf.....	76.7	+0.6	+11.4	2.44	-1.00	-4.50	3.4	-0.8	69	-5
Ohio Valley and Tennessee.....	66.6	-1.4	+0.8	2.72	0.00	-0.30	3.7	-0.7	70	-2
Lower Lakes.....	62.9	-0.2	+0.4	2.56	-0.20	-1.20	5.1	+0.3	68	-5
Upper Lakes.....	58.2	-1.2	+0.7	3.82	+0.70	+1.90	5.9	+0.7	76	-1
North Dakota.....	55.4	-1.6	-15.6	1.30	-0.10	+0.90	4.4	0.0	72	+6
Upper Mississippi Valley.....	62.8	-1.3	+2.8	3.71	+0.20	-1.00	4.7	+0.4	73	+1
Missouri Valley.....	64.8	-0.5	+3.3	2.48	-0.20	-5.50	3.5	-0.5	67	+1
Northern slope.....	56.2	-1.1	-10.8	0.95	-0.20	-0.10	3.6	-0.4	57	+2
Middle slope.....	68.6	-0.1	+4.0	1.61	-0.60	-4.00	3.2	-0.2	59	+1
Southern slope.....	72.1	-0.7	+15.1	1.28	-1.30	-4.40	3.1	-0.7	61	-2
Southern Plateau.....	70.0	-0.6	-1.1	0.92	-0.10	+1.00	2.4	-0.1	47	+8
Middle Plateau.....	62.6	0.0	-2.5	0.42	-0.20	+0.20	1.8	-1.1	37	-1
Northern Plateau.....	60.8	-0.4	-14.9	0.25	-0.50	+1.70	3.4	-0.2	45	-1
North Pacific.....	59.9	+1.1	-6.0	0.98	-1.80	-6.10	4.9	-0.4	76	+4
Middle Pacific.....	63.9	+0.5	+0.6	0.89	+0.10	+0.50	3.1	-0.3	60	-7
South Pacific.....	66.5	-0.8	-1.4	0.84	+0.60	+5.10	2.9	+0.3	71	+5

WEATHER CONDITIONS ON THE NORTH ATLANTIC OCEAN DURING SEPTEMBER, 1916.

The data presented are for September, 1915, and comparison and study of the same should be in connection with those appearing in the REVIEW for that month. Chart IX (XLIV-121) shows for September, 1915, the averages of pressure, temperature, and the prevailing direction of the wind at 7 a. m., 75th Meridian time (Greenwich mean noon), together with the locations and courses of the more severe storms of the month.

PRESSURE.

The distribution of the average pressure for the month, as shown in Chart IX, presents few unusual aspects. The Azores HIGH was practically normal in location and intensity, and the same can be said of the Icelandic LOW, which was but slightly south of its normal position. A slight depression of 30 inches surrounded the Bermudas, due to unusually low pressure during the first decade of the month, and the continental HIGH with a crest of 30.10 inches was central near Elkins, W. Va., extending as far east as the 72d meridian. While the average pressure gradients for the month were not steep, the range of pressure from day to day was very marked in some localities. In the 5-degree square that includes St. Johns, Newfoundland, the barometer readings ranged from 30.28 inches on September 2 to 28.85 inches on the 27th, the monthly mean being 29.86 inches.

As a rule, north of the 35th parallel and west of the 55th meridian, the pressure was above the average during the first decade of the month, also from the 13th to the 17th, and from the 23d to the 25th, while a marked depression existed from the 27th to the 30th. During the remaining periods of the month the pressure was not far from normal. In the waters adjacent to the European coast, high pressure prevailed from the 5th to the 11th, and from the 15th to the 17th, while low barometric readings were reported from the 25th to the 29th. Unusually low pressure existed in the vicinity of the Bermudas between the 2d and the 9th, the lowest barometric reading, 29.17 inches, occurring on the 3d. This unusual reversal of normal conditions affected the monthly mean to a slight extent, and was responsible for the low shown on Chart IX, and mentioned previously. The West Indian hurricane that prevailed from September 22 to October 2 caused low pressures for a number of days in the Caribbean Sea and Gulf of Mexico, but did not affect the monthly means materially.

GALES.

On Chart III (XLIII-106) Tracks of Centers of Low Areas, for September, 1915, a LOW (I on Chart IX) is shown that first appeared on September 2 about 4° east of Bermuda. The path followed by this disturbance was unusually erratic. After starting toward the northwest, it curved toward the south and southeast, then, recurving through the west and northwest, it started in a northeasterly direction and on the 9th was central near latitude 35°, longitude 65°, where a number of vessels reported southeasterly to southwesterly gales of from 40 to 55 miles an hour.

The disturbance continued in its northeasterly course with an increased rate of movement, and on the 10th the center was near latitude 40°, longitude 61°. Heavy winds still prevailed south of the center, decreasing as the American coast was approached, while fog was encoun-

tered a short distance east of New York. On the 11th the center was about 150 miles south of St. Johns, Newfoundland; gales of from 40 to 55 miles an hour were reported between the 35th and 38th parallels, although the storm area was not large, as between the 65th meridian and the American coast the winds were light and variable. On the 12th the disturbance was central near latitude 50°, longitude 44°, where the area had increased in extent and the winds diminished in force since the previous day, although the barometer had fallen slightly. Still traveling toward the northeast, the low was near latitude 55°, longitude 36°, on the 13th; the barometer reading at the center had fallen to 29.15 inches, and the storm area was larger in extent, as gales were encountered along the path of the northern steamer routes west of the 30th meridian. This low remained nearly stationary from the 14th to the 24th, and heavy winds prevailed near its center during the greater part of that period.

On September 22 a slight depression existed near latitude 15°, longitude 64°, that afterward developed into one of the severest West Indian hurricanes ever experienced. This storm was fully discussed by Mr. E. H. Bowie, forecaster, in a special bulletin, and also by Mr. Isaac M. Cline, in an article that appeared in the MONTHLY WEATHER REVIEW for September, 1915.

No unusually heavy winds were reported from the Caribbean Sea and Gulf of Mexico between the 22d and 27th, but on the 28th one vessel near latitude 27°, longitude 87°, recorded an easterly gale of 40 miles an hour. On the morning of the 29th, some hours before the storm reached its height in New Orleans, two vessels about 150 miles south of Mobile reported southeasterly gales of 55 miles an hour, with a barometer reading of 29.45 inches. On the morning of the following day the barometer had risen to 29.70 in this vicinity and the winds moderated in force; the center of the storm was then in eastern Mississippi and moving rapidly toward the northeast.

TEMPERATURE.

In mid-ocean north of the 50th parallel, the average mean monthly temperature was considerably above the normal, the positive departures ranging from 3° to 4°; the same conditions held true in the waters adjacent to the European coast, while in the vicinity of the Irish Channel the departure was +7°. South of the 50th parallel, between the 30th and 60th meridians, the temperatures

were not far from the normal, the departures ranging from +2° to -2°, while in the waters along the American coast they were slightly positive.

The temperature departures at a number of Canadian and United States Weather Bureau stations on the Atlantic and Gulf coasts were as follows:

	°F.		°F.
St. Johns, Newfoundland..	-1.2	Norfolk.....	+2.5
Sydney, C. B. I.....	+1.0	Hatteras.....	+2.4
Halifax, N. S.....	+1.8	Charleston.....	+3.0
Eastport.....	+1.8	Key West.....	-0.1
Portland.....	+1.8	Tampa.....	+3.4
Boston.....	+4.1	Pensacola.....	+1.7
Nantucket.....	+2.2	New Orleans.....	+3.2
Block Island.....	+1.3	Galveston.....	+1.8
New York.....	+2.5	Corpus Christi.....	+2.8
Washington.....	+2.9		

The lowest temperature reading reported during the month was 46°, and occurred in the 5° square between the 50th and 55th parallels and the 55th and 60th meridians, on the 19th, 26th, 27th, 28th, and 29th of the month; the highest temperature for the same square was 57°, and occurred on the 3d. The highest temperature recorded in any 5° square was 83°, occurring in the Caribbean Sea and Gulf of Mexico on a number of days during the month, while the lowest for the same area was 79°.

FOG.

There was somewhat less fog than usual off the Banks of Newfoundland and along the northern steamer routes, while in the vicinity of the American coast the amount was not far from the normal.

Maximum wind velocities, September, 1916.

[Velocities below 50 mls./hour (22.4 m./sec.) are not included here.]

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		Mis./hr.				Mis./hr.	
Buffalo, N. Y.....	8	50	sw.	New York, N. Y..	8	60	nw.
Detroit, Mich.....	7	68	nw.	Point Reyes			
Erie, Pa.....	7	54	sw.	Light, Cal.....	3	57	nw.
Little Rock, Ark..	21	50	nw.	Do.....	4	58	nw.
Modena, Utah.....	17	52	sw.	Do.....	8	64	nw.
Mount Tamapais,				Do.....	24	54	nw.
Cal.....	4	68	nw.	Do.....	25	55	nw.
Do.....	5	67	nw.	St. Louis, Mo....	27	56	s.
Do.....	7	63	nw.	Sandy Hook, N. J.	8	56	nw.
Do.....	8	72	nw.				
Do.....	25	62	nw.				